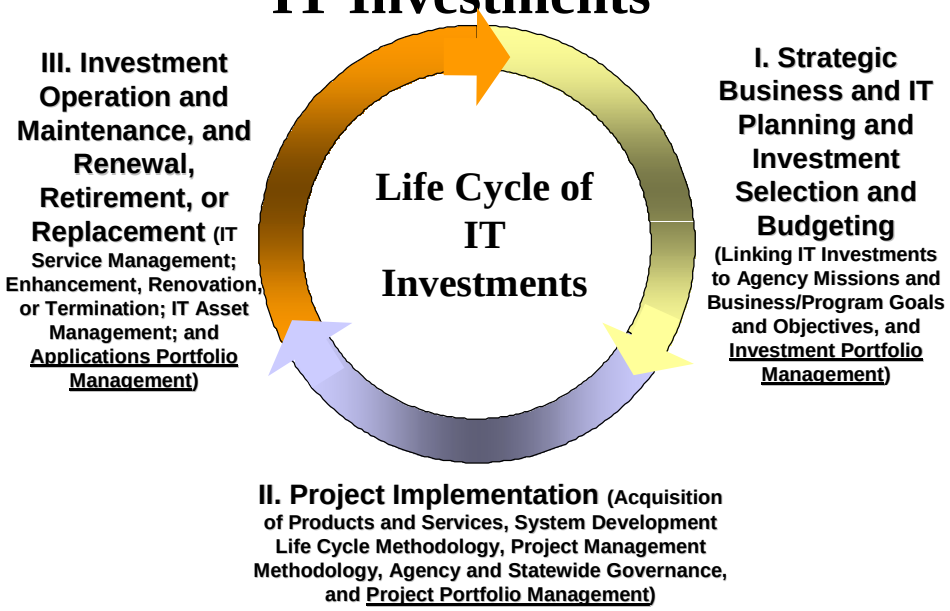
Application Portfolio Management Implementation Project

Framework for Managing IT Investments



Agency CIO Briefing Book

March 2006

Application Portfolio Management Implementation
Agency CIO Briefing Book
Table of Contents

Application Portfolio Management Implementation Briefing for Agency CIO

1. Proposed Agenda

Topic	Page Numbers	Approximate Time (in Minutes)
Introductions		5
Purpose and Objectives of Meeting		5
Review Contents of Briefing Book		5
Responsibilities of Project Team and Agencies	5	10
Training Approach, Personnel to Attend, and Schedule of Sessions	6 - 9	10
Guidelines for Estimating Application Operation, Maintenance, and Enhancement Costs	11 - 18	5
Discussion of Data Entry and Validation		5
Description of Level IV	21-22	5
Agency Questions and Other Discussion Items		10
Total		**60**

2. Contact and Reference Information

Contacts

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Scheduling Questions

- Michelle Jernigan
  - Michelle.Jernigan@ncmail.net
  - 754 – 6655
- Training Requests Send to:
  - PPM.Admin@ncmail.net

Help Desk

- ITS Help Desk
  - Support@ncmail.net
  - 754 - 6000

Reference Sites

- Portfolio Management Initiative Website
  - http://www.scio.state.nc.us/PortfolioManagementInitiative.asp
- Login for APM Tool
  - https://www.ppm.state.nc.us/UMTNC
  - **Use the same Login ID as for Project Portfolio Management**

Helpful Information on Portfolio Management Initiative Website

- Portfolio Management Project Mission, Goals and Objectives
- Conceptual APM Training Presentation
- IT Advisory Committee Presentation

3. Responsibilities

- **ITS**
  - Pre-populate Legacy Study Data (If Requested)
  - Conduct Training
    - Data Entry
    - Charting Analysis
    - Level IV (Optional)
  - Provide General Support During Selected Wave
  - **Supply Form to be Filled in by the Agencies With Trainees Names and Roles**

- **Agency**
  - Designate Main Point of Contact
  - Perform Project Management for Agency Implementation (Does Not Require Project Approval)
  - Come to Training Session(s)
  - Verify Legacy Data
  - Complete Remaining Data
  - Ensure All Applications are Included
  - Perform Analyses
  - Perform Regular Updates to Agency's APM Data to Ensure it is Complete, Accurate and Current
  - **Responses with Names and Roles of Trainees for Agencies in Each Wave Are Due by the Dates Below:**
    - **Wave 1 – February 27, 2006**
    - **Wave 2 – March 17, 2006**
    - **Wave 3 – April 7, 2006**
    - **Wave 4 – April 28, 2006**
  - **All Data Must be Entered and Available for Enterprise (Statewide) Analyses and Reporting by September 5, 2006. However, Agencies May Need to Perform Analyses and Reporting at Earlier Dates to Meet Agency IT Planning Requirements and Due Dates For Submission of Agency IT Plans to the State CIO by October 1, 2006, per State Statutes.**

4. Wave Assignment Schedule

Agencies	*Assigned Wave*	*Start Date*	*End Date*
Department of Environment and Natural Resources	**Beta**	9-Jan	24-Feb
Department of Public Instruction	**Beta**	9-Jan	24-Feb
Department of Administration	***Wave 1***	6-Mar	7-Apr
Department of Transportation	***Wave 1***	6-Mar	7-Apr
Office of State Budget Management	***Wave 1***	6-Mar	7-Apr
Office of State Personnel	***Wave 1***	6-Mar	7-Apr
Office of the Gov/LT Gov Office	***Wave 1***	6-Mar	7-Apr
Department of Agriculture	***Wave 2***	27-Mar	28-Apr
Department of Health and Human Services	***Wave 2***	27-Mar	28-Apr
Department of Insurance	***Wave 2***	27-Mar	28-Apr
Department of Justice	***Wave 2***	27-Mar	28-Apr
Department of Juvenile Justice and Delinquency Prevention	***Wave 2***	27-Mar	28-Apr
Office of Information Technology Services	***Wave 2***	27-Mar	28-Apr
Department of Commerce	***Wave 3***	17-Apr	19-May
Department of Corrections	***Wave 3***	17-Apr	19-May
Department of Crime Control and Public Safety	***Wave 3***	17-Apr	19-May
Department of Cultural Resources	***Wave 3***	17-Apr	19-May
Department of Labor	***Wave 3***	17-Apr	19-May
Department of the State Treasurer	***Wave 3***	17-Apr	19-May
North Carolina Community Colleges	***Wave 3***	17-Apr	19-May
Office of the State Auditor	***Wave 3***	17-Apr	19-May
Department of Revenue	***Wave 4***	8-May	31-May
Employment Security Commission	***Wave 4***	8-May	31-May
Office of Administrative Hearings	***Wave 4***	8-May	31-May
Office of the State Controller	***Wave 4***	8-May	31-May
State Board of Elections	***Wave 4***	8-May	31-May
Wildlife Resources Commission	***Wave 4***	8-May	31-May

5. Who Should Attend Training (Levels I – III)

Resource	Activities
Application Manager	Complete Application Information Tab, Complete Architectural Fit Questionnaire, Complete Risk Questionnaire (Technical Risk Section),
Business Analyst / User, Program Manager (Non-Technical Staff)	Complete Risk Questionnaire (Business Risk Section), Complete Operational Performance Questionnaire
Financial / Budget Analyst	Complete Application Costs (Budget, Actual, Forecast)
Technical Architect	Complete Application Information Tab, Complete Architectural Fit Questionnaire, Complete Risk Questionnaire (Technical Risk Section)

6. Training Dates

All training will take place at 3900 Wake Forest Road ("The Red Roof Inn"), training room 39-B.
Laptops will be provided by ITS for use by Trainees.
Basic Training is a prerequisite for attending Charting Analysis.

Session	Dates	Duration	Attendees
Basic Training • Create Application Inventory • Basic Navigation of Tool • Configure Scorecard Views & Create Filters • Application Associations	**Wave 1** 3/7 or 3/8 or 3/9 **Wave 2** 3/28 or 3/29 or 3/30 **Wave 3** 4/18 or 4/19 or 4/20 **Wave 4** 5/9 or 5/10 or 5/11	4 hours	Application Managers, Business Analysts / Users, Financial / Budget Analysts, Technical Architects, CIO, CFO
Charting Analysis • Correlation Analysis • Output Tools • Charting Analysis • Application Reports	**Wave 1** 4/5 or 4/6 **Wave 2** 4/25 or 4/26 **Wave 3** 5/17 or 5/18 **Wave 4** 5/30	2 – 3 hours	Application Managers, CIO's, CFO's, Business Analysts / Users, Financial / Budget Analyst

7. Applications Portfolio Management (APM) Process – Detailed Slide

Applications Portfolio Management (APM) Process

Tool Assisted Decisions — Transition to Executive Decision Making Processes — Subjective Business Decisions

Step 1 Collect, Validate and Maintain Data (Build and Maintain Inventory)

Step 2 Perform Assessments (Analyze Portfolio)

Step 3 Determine Dispositions and Transition Roadmaps (Manage Portfolio)

Step 4 Determine Priorities, Timeframes, Costs and Benefits (Optimize Portfolio)

Funding Requests

Investment Portfolio Management (IPM) Process

Iterative Steps for Analysis of Applications

Major Activities
One-Time Work
- Transfer and validate selected relevant data from Keane/Gartner Study to software support tool
- Perform initial collection and validation of remaining data

Ongoing Work
- Perform data changes and validations as they occur
- Collect and validate data for implementation projects transitioning to applications assets

Major Data Elements
- ID
  - Name and description
  - Business and IT owners
  - Application type
  - Business processes enabled
  - Business value/criticality
  - User information
- Costs (Internal Personnel, External Personnel, Hardware, Software, Other External Costs)
  - Functional quality
    - Data quality
    - Application business quality
  - Technical / Operational quality
    - Architecture
    - Operational
  - Risk profile
    - Security
    - DR/BCP
    - Vendor viability
    - Regulatory compliance
    - Business and IT staffing
    - Information
    - Privacy and confidentiality

Date Modified
3/15/2006

Major Activities
Identify
- Business problems/issues
  - Relations to and support of business processes
  - Support of key business or political drivers
  - Criticalities to agency missions and business goals and objectives
  - Key users and importance to them
  - Resident business knowledge
  - Enable/support regulatory compliance
  - Dependences on and support for other applications
  - Business continuity preparedness
  - Gaps in business support - current and future
- Technical problems/issues
  - H/W and S/W vendor support
  - Resident technical knowledge
  - Warranty expirations
  - Availability, reliability, and maintainability
  - Obsolete or dated technology
  - Information availability and data quality/integrity
  - Usability
  - Enterprise architecture fit
  - Adequacy of supporting technical infrastructure
  - Use of shared technical infrastructure and/or common technical services
  - Security, privacy, and confidentiality
  - Recoverability from disasters/failures (DR status)
  - Risk vulnerabilities, probabilities, and impacts
  - Funding dependability and reliability
  - Technical / Operational
  - Business
  - DR/BCP
- Other problems/issues
  - Cost performance (excessive costs and areas for potential savings)
  - Duplications of business functions among applications

Evaluate
- Status/Health (Good, Bad, Moderate)
  - Business
  - Technical / Operational
  - DR/BCP
  - Funding
  - Value (High, Moderate, Low)
  - Strategic for agency mission or governmental initiative
  - Essential for business criticality or regulatory compliance
  - Enterprise architecture fit
- Risk of unrecoverable failure (High, Medium, Low)

Major Activities
Consider
- Cost-effectiveness
  - Current and projected O&M costs and reasonableness with industry standards
  - Support for current business process and enabling of future business needs
  - Opportunities for savings in business process operations (process efficiencies)
  - Opportunities for citizen service improvements
  - Opportunities for savings in systems management and operations processes
  - Opportunities for savings in duplications of business functions
  - Opportunities for savings in the use of shared technical infrastructure and common technical services
  - Opportunities to move to target agency and statewide technical architectures
  - Opportunities to standardize and consolidate technical infrastructure
  - Opportunities to eliminate or consolidate applications
  - Opportunities to support/ improve DR/BCP
- Risk acceptability - status of :
  - Technology / Operations risks
  - Business risks
  - Continuing funding risks
  - DR/BCP risks
  - Regulatory compliance risks
  - Security, privacy, and/or confidentiality risks

Identify
- Problems/opportunities
- Alternative approaches
- Best actions for managing applications over expected life spans

Determine Whether To
- Invest additional funds
  - Technical renovation/enhancement
  - Functional enhancement
  - Replace (COTS, GOTS, or custom) and retire
- Sunset/eliminate
- Consolidate
- Replace and consolidate as part of an agency wide or state wide initiative
- Continue maintenance

Major Activities
Identify
- Dependencies on other applications and projects
  - Costs/fiscal requirements
  - Personnel resource requirements
  - Technical infrastructure requirements
  - Benefits/value to accrue

Confirm and/or Develop
- Implementation approach
  - In-house or outsource
  - COTS, GOTS, or technical or business enhancement
  - Phases of work

Determine Priorities and Timeframes
- Select priority for action (High, Medium, Low)
  - Risks to be avoided/mitigated
  - Strategic value
  - Criticality to operations
  - Savings generated
  - Other benefits/value offered
  - Costs
  - Funding availabilities
- Select timeframe for action
  - Immediate (within next 2 years)
  - Near-term (between next 2 to 4 years)
  - Long-term (after next 4 years)

Potential Benefits for Selected Actions
- Consolidate/eliminate applications
  - Operational cost savings (licenses, staff, etc.)
  - Simplify DR/BCP, security, privacy, and confidentiality
  - Remove deviant from agency/state technical architecture - reduce complexity
  - Create funds for new projects/investments from savings
- Functional/technical renovation or replacement
  - Transition to agency/state technical architecture
  - Operational cost savings
  - Better availability, reliability, and maintainability
  - Improved citizen services
  - Improved/reengineered business processes
  - Improved data accessibility, action ability, and quality/integrity
  - Improved DR/BCP, security, privacy, and confidentiality
  - Easier adaptability and scalability
  - Better enable/support regulatory requirements
  - More reliable, available, and economical vendor or agency support
  - Enable/support business drivers or political initiatives

8. Example Work Plan

	Task Name	Duration	Resource Names
1	**Determine Agency Personnel that will Participate in Project**	**4 hrs**	**CIO**
2	Schedule them for training	4 hrs	
3	Submit Form to ITS With Attendees Names and Roles	0 hrs	
4	**Develop High Level Project Plan**	**8 hrs**	**CIO**
5	Determine Key Responsibilities	8 hrs	
6	Determine Schedule/Milestones	8 hrs	
7	Include Appropriate Personnel	8 hrs	
8	**Develop Approach for Collecting and Inputting Application Data**	**8 hrs**	**CIO**
9	**Develop Approach for Conducting Application Analyses**	**8 hrs**	**CIO**
10	**Attend Basic Training**	**4 hrs**	**Application Manager,Technical Architect,Financial / Budget Analsyst,Business Analyst / User,Business Owners,CIO**
11	**Fill in Information For Each Application**	**5 hrs**	
12	Validate Legacy Study Data	1 hr	
13	Complete Application Info tab	0.5 hrs	Application Manager,Technical Architect
14	Complete Budget Cost tab	0.5 hrs	Financial / Budget Analsyst
15	Complete Strategic Impact tab	0.5 hrs	Business Analyst / User
16	Complete Architectural Fit tab	0.5 hrs	Technical Architect,Application Manager
17	Complete Risk Assessment tab (Technical Risk Section)	0.5 hrs	Technical Architect,Application Manager
18	Complete Risk Assessment tab (Business Risk Section)	1 hr	Business Analyst / User
19	Complete Operational Performance tab	0.5 hrs	Business Analyst / User
20	**Attend Charting Analysis Training**	**2 hrs**	**Business Analyst,CIO,CFO,Financial / Budget Analyst,Application Manager**

9. Dissertation on Application Maintenance and Enhancement Costs

Under increasing fiscal pressures for obtaining greater results from taxpayer dollars, state government must explore opportunities to innovate and maximize business benefits and public value through technology. Although the economy may be recovering, the state is facing tighter budgets, and fiscal resources must be allocated where they provide the greatest benefits. A significant opportunity for value creation and cost-effectiveness in spending is through the understanding, leveraging, extending, and rationalizing of existing technology investments, specifically legacy applications.

The purpose of application portfolio management (APM) is to inventory, assess, and develop management plans for individual applications and each agency's and the state's application portfolios. Assessments of applications are performed by using a variety of evaluation criteria, including alignment with agency strategic missions and governmental priorities, benefit and value to governmental programs and agency business, performance (business, operational, and technical), cost to maintain and operate, technical architectural fit, and risk. Four key uses of APM in supporting the management of applications are:

1. Identify high-risk applications (serious vulnerabilities with severe impacts) and assist in developing remediation approaches.

2. Identify areas of over- and under-investments in support and remediation activities and help in determining strategies for the reallocation of budgets to more appropriately match expenditures with the needs to mitigate risks and maximize benefits and results.

3. Determine the short- and long-term strategies and develop cost-effective plans for applications over their useful lives. That is, create a disciplined approach for the life-cycle management of applications assets, from entry into production through enhancements, renovations, and eventual consolidation or retirement.

4. Sunset or eliminate (with or without replacement) when applications are no longer cost-effective or risk-acceptable.

APM addresses maintenance and operations costs, and these expenses typically involve 60% to 80% of IT budgets – the largest part of these budgets. Per Gartner statistics, the average life of an application is eight and one-half years, and approximately 30% of an application's development cost is spent annually for maintenance and enhancements. Therefore, in a short period of time, maintenance and enhancement costs exceed development expenses and become the substantial part of the lifetime costs of applications assets.

The major purposes of this dissertation are:

- Describe how the UMT (now Microsoft) software tool can assist agency staff in analyzing and managing applications from a cost perspective to achieve an appropriate capital allocation of available fiscal resources.

- Explain how operations and maintenance costs are posted and processed in the software tool.

9.1 Key Definitions

The following definitions are extracted in part from the Gartner publication How to Start Estimating Software Life Cycle Costs dated July 1, 2005.

Portfolio Management – A primary purpose of portfolio management is to look at capital allocation. For applications, this involves cash outlays over a period of time. The period is either the useful life (perhaps five to ten years), or a fixed number of years that is prescribed by the investment process.

Fiscal Year – The fiscal year for state government is from July 1 to June 30. Annual expenses are total costs incurred during this period. The software tool refers to fiscal year 2005 – 2006 as fiscal year 2006, (i.e., the last number of the fiscal year). For fiscal year 2006 – 2007, the tool refers to it as 2007 (07), etc.

Budgeting – For most purposes, budgeting looks at cash outlays over the next fiscal year. However for long-term planning, budgeting also may involve a multi-fiscal year rolling capital outlay plan. The NC General Assembly has mandated a five-year (next year plus an additional four years) plan of anticipated costs for operating, maintaining, and enhancing applications. Of course, the relative accuracy of future-year budgets decreases as the number of 'out years' increases (i.e., the reliability of year-four numbers is usually much less than those for the immediate next year). Budgets will need to include funds for the support (maintenance, operation, enhancement, renovation, etc.) of the current inventory of applications, adjusted for the increases driven by new applications entering into production and the decreases from applications being taken out of production.

Application Portfolio Management – APM is the evaluation of the inventory of the current application stock for architectural fit, for suitability to the business needs, and for the prospective costs and risks of various application investment or retirement strategies. This assessment and planning activity establishes a context for the budget process and influences the mix of new development projects.

Maintenance – Repetitive and ongoing work comprising very small enhancements (less than two weeks in duration) to keep the application functioning. Types of maintenance include corrective (defect repair), preventative (preventing a defect before it occurs), adaptive (modifications needed to maintain usability in a changing environment), and perfective (modifications to support existing business functional requirements). Maintenance is a 'keep the lights on' activity, and it does not add functionality.

Enhancements – These are projects that add, change, or remove software functionality. These are usually one-time and unique events, and they are should be treated as projects (often small ones).

9.2 Roles and Uses of Costs in Managing Applications

The primary purpose of costs in evaluating individual applications and application portfolios and planning future dispositions of assets is to link capital outlays with the importance; technical, business, and operational status; and risks of the assets. The intent is not to under-invest or over-invest in applications from individual application and portfolio perspectives. The cost-effective management of applications accomplishes two objectives: (a) ensure the amounts of funds invested are aligned with agency business strategies and priorities and governmental program needs, and (b) assist agencies in meeting their fiduciary responsibilities for the stewardship of funds and integrity of assets through expenditure strategies that create the most public value for dollars invested.

The first objective means the state should spend scarce fiscal resources on the right things and the right ways to meet the right expectations of service levels and functional capabilities. The second objective addresses the need to achieve all possible savings, while maintaining the value of and minimizing the risks of failed or under performing assets. The table below illustrates a potential simplified conceptual scheme for evaluating candidate actions depending on the status of applications and their importance and worth to an agency or the state.

Application Name	Importance to Agency or State	Risk Score	O&M Cost	Business, Operational, and/or Technical Quality	Potential Actions
A	Strategic and mission critical	High risk	High cost	Low quality	Action required – consolidate, retire and replace, or renovate
B	Strategic and mission critical	Low risk	High costs	High quality	Possible over funding situation – redirect funds to other applications or new development
C	Strategic and mission critical	High risk	Low cost	Low quality	Possible under funding situation – raise funding priority to mitigate risks and improve quality
D	Not mission critical and not essential	High risk	High cost	Low quality	Consider elimination or consolidation – not worth the fiscal investment
E	Not mission critical, but important to agency	Low risk	High cost	High quality	Possible over funding situation – redirect funds to other applications or new development

The reduction in the size of applications inventories and the technical simplification of the remaining applications are two effective ways to achieve cost savings. The elimination of duplicate applications or consolidations of those performing similar functions are potentially higher-payoff actions to achieve savings. The replacement or renovation of applications (especially reconfiguring to standard platforms) may simplify operations, leading to lower costs; improvements in availability, reliability, and maintainability; and easier disaster recovery/business continuity. All of the sins committed in selecting and

implementing applications manifest themselves in excessive operations costs; therefore, if efficiencies are to be realized, these must be rectified in the production phase of application life cycles.

Risk is a key evaluation criterion. A non-critical, high-risk, and high-cost application should be considered for elimination or consolidation. A high-risk, strategic, but low-cost application may need a higher budgetary priority to ensure its integrity. High-risk and mission-critical applications should receive top priority for remediation considerations and funding commitments. High-risk applications that are no longer aligned with agency business strategies or political initiatives and are not important to the accomplishment of governmental programs or agency business processes may be prime candidates for elimination or consolidation.

In summary, as a minimum, actions must be taken for applications that are either no longer cost-effective or risk-acceptable, and costs play a key role in identifying these situations and developing appropriate management approaches and plans. Costs, used in concert with other analysis criterion, can also be used to:

- Allocate in a more cost-effective manner available continuation budget funds so that they are directed to the applications and uses that offer the most benefits and value to the agencies and the state. That is, spend the money where it does the most good.

- Assist in identifying opportunities and preparing justifications for funding requests to make worthwhile investments in applications that are not possible under continuation budget constraints. That is, justify obtaining additional funds for renovating, enhancing, or replacing strategic assets that are costing too much money to maintain, while still presenting problems and risks.

- Identify savings that can be redirected to other uses of funds, such as new development projects or upgrading of technical infrastructures (i.e., free up application maintenance funds for other investments and uses that provide better results and more benefits). This can be accomplished through the more appropriate allocation of capital outlays through the better management of applications.

Posting and Processing of Costs in the Software Tool

The software tool has three types of costs, and each is summarized below.

Budget – Budget values are kept and posted on an annual basis. Budget values must be posted for (a) the current fiscal year, (b) the next fiscal year, and (c) the following three fiscal years.

Budget Postings for the Current (2005 – 2006) Fiscal Year

Because it serves no useful purpose to have budget values for the current fiscal year (2005 – 2006) in the tool, they do not have to be posted during the initial implementation. Budget values in the software tool that must be entered during

the initial rollout (now and this summer) are fiscal years: 2006 – 2007 (next year), 2007 – 2008 (following first year), 2008 – 2009 (following second year), and 2009 –2010 (following third year). This will enable the State CIO to report to the General Assembly a four-year (2006 –2007 to 2009 – 2010) cost liability forecast for the operation, maintenance, and enhancement of legacy applications.

Budget Postings for the Next (2006 – 2007) Fiscal Year

For the next fiscal year (2006 – 2007), budget numbers must be posted for the fiscal years 2006 –2007 through 2010 – 2011. (Fiscal year 2006 – 2007 will be the current fiscal year, fiscal year 2007 – 2008 will be the next fiscal year, and fiscal years 2008 – 2009 through 2010 – 2011 will be the following three fiscal years.) Therefore, beginning with fiscal year 2006 – 2007 and thereafter, the General Assembly will have five-years of cost liabilities for operating, maintaining, and enhancing legacy applications.

Actual - Actual values are kept and posted on a monthly basis; however, for our purposes, it is acceptable to post the total annual actual values in the last month of the fiscal year, quarterly, bimonthly, or any other desired schedule. The software tool will automatically add all 12 months to get the annual actual costs, and the annual value is the primary one used in analyses. Actual costs are required for fiscal year 2005 – 2006.

There is one key closeout rule that must be observed. The software closes out or takes a 'snapshot' at the end of second month for the preceding month. That is, it closes out January at the end of March, February at the end of April, etc. The closeout of June takes place at the end of August, giving the agencies two-months to get annual numbers posted. Therefore, at their option, agencies may post the total year's actual costs to the month of June. When a closeout takes place, the preceding two-month's actual values are locked in and cannot be changed without administrator intervention. That is, the closeout at the end of March locks in the January actual values. A key point is the Office of State Controller will use the annual actual costs for its report to the General Assembly, and those numbers will be obtained from the software tool after the year-end closeout, which occurs the end of August.

Forecast – Forecasts probably will not be used by agencies, especially in the initial data gathering and posting efforts. In fact, forecasts are useful only if agencies are interested in cost forecasting, such as a more accurate end-of-year forecast of actual costs. The software tool's processing rule for forecasts is, if nothing is posted, the end of year forecast is equal to the sum of actual costs to date plus remaining budgets. That is, after the February closeout for January, the end-of-year forecast would equal the actual costs for the months of July through January plus the budget values for the months of February through June. Of course, if an agency elects not to post any of these values until the end of the year, then all will be zero until that posting takes place. In general, this is acceptable, as all analyses and reporting use annual (total year) actual and budget costs – not monthly ones.

A key reminder is that by the end of August 2006, the following cost postings are required for each legacy application in the agencies' portfolios:

- Actual for fiscal year 2005 - 06 to be reported by the Office of State Controller to the General Assembly.

- Budget for fiscal years 2006 - 07, 2007 - 08, 2008 – 09, 2009 – 2010, and 2010 – 11 for the State CIO's report to the General Assembly.

10. Cost Estimates and Allocation Guidelines

Agencies should use their best judgment when estimating an application's operating costs. While some agencies have sophisticated cost capture and allocation processes in place, many agencies capture only direct costs and do not allocate shared costs among their various applications. Agencies must make a reasonable effort to report all material costs of operating an IT application.

Agencies should consider how often the data must be updated and how the data may be used to determine the appropriate level of effort needed to collect and report operating cost data. Many groups of decision makers will use the cost data from the Application Portfolio module.

- Agency leadership will use the cost data for trend analysis, in decisions to retire/replace an application, or to justify a budget request.
- OSC will report the cost data as part of the annual Information Technology Expenditures Report.
- OSBM and ITS will review the cost data when considering budget requests.
- Legislative staff will use the cost data to monitor the State's total investment in information technology.

Estimation assumptions and allocation methodologies are the responsibility of the agency and should be well documented. This documentation may be kept internally or attached to the application record using the Document Management tab.

An agency may find that a unique estimation and allocation methodology is needed for each expense type in order to provide the most reasonable estimate of application operating costs. Some guidelines to consider when creating this methodology are listed below:

- Include at least all direct costs and material indirect costs to operate the application. Direct costs are those that can be obviously and physically traced to the application. Indirect costs are not directly identifiable with any particular application but are incurred as a result of overall operating activities. For example, salary expenses for a DBA supporting two applications are direct costs for each application, while salary expenses for the IT Division Director are generally indirect costs.

- Many agencies can identify the total budget/cost of their IT division. However, only allocating the cost of the IT department to all applications may miss material direct or indirect application costs

accounted for in other segments of the agency. Review the entire agency budget when creating a costing methodology.

- Avoid allocating shared costs evenly among applications. Generally, a data element other than number of applications provides a better allocation basis.

- Employer paid fringe benefit costs are part of salary expenses. These costs include FICA match, retirement match, and medical insurance. The match percentages and insurance amount may change annually. Longevity, bonus, and overtime pay are also part of actual salary expense.

- Some agencies require staff to record time spent on each application. While this makes allocating direct staff cost easier, it is not required. Job description percentages or number of users supported may provide a reasonable basis without changing the agency timekeeping processes.

- Some application support costs may not be recorded in a traditional IT account code. Examples include registration or course fees for staff training, facility rent and utilities, and travel expenses.

- Some agencies' IT division budgets include purchasing workstations and general office software for all users. Workstations and general software are usually indirect costs and may not be material costs to a specific application.

For agencies using NCAS, the accounting code block (center field) may be used to capture application costs as part of the standard accounting processes. Check with the agency fiscal officer to determine if this option is available.

10.1 NCAS Code Mapping to PPM Tool Cost Structure

Categories include all 9 or 11 digit accounts that begin with the listed code.

Internal Personnel

531xxx	Salaries and Benefits

External Personnel

532140	OTH INFORMATION TECH SVCS
532141	WAN SUPPORT SERVICES
532142	VIDEO TRANSMISSN SUPPORT
532143	LAN SUPPORT SERVICES
532144	PC/PRINTER SUPPORT SVC
532145	SERVER SUPPORT SVC
532146	MAINFRAME SUPPORT SVC
532147	IT SEAT MANAGEMENT SVC

Other purchased contractual services accounts (e.g. 532199) if used in lieu of a 53214xx account.

Other External Costs

532811	TELEPHONE SERVICE
532812	TELECOMMUN DATA CHRG
532813	TELECONFERENCE CHARGES

532814	CELLULAR PHONE SERVICES
532815	EMAIL AND CALENDARING
532816	VIDEO TRANSMISSION CHARGE
532817	INTERNET SERV PROV CHARGE
532818	DATA WIRING SVC CHRG
532819	TELEPHONE WIRING SVC CHRG
532821	COMPUTER/DATA PROCESS SVC
532822	MANAGED LAN SVC CHARGE

Infrastructure – Hardware

532332	REPAIRS-OTH COMPUTER EQP
532334	REPAIR-WAN EQUIP
532335	REPAIR-VIDEO TRANSMSN EQP
532336	REPAIRS-LAN EQUIP
532337	REPAIRS-PC/PRINTER
532338	REPAIRS-SERVERS
532440	**MAINT AGREEMENT-DP EQUIP (invalid account effective 07/01/02)**
532443	MAINT AGRMT-OTHER DP EQP
532444	MAINT AGRMT-WAN EQUIP
532445	MAINT AGRMT-VIDEO TRAN EQ
532446	MAINT AGREE-LAN EQUIP
532447	MAINT AGREE-PC/PRINTER
532450	MAINT AGREE-SERVER EQUIP
532451	MAINT AGREE-MAINFRAME EQP
532522	**RENT/LEASE-DP EQUIPMENT (invalid account effective 07/01/02)**
532523	RENT/LEASE-VOICE COMM EQU
532530	RENT/LEASE-OTHER DP EQP
532531	RENT/LEASE-WAN EQUIP
532532	RENT/LEASE-VIDEO TRAN EQU
532533	RENT/LEASE-LAN EQUIP
532534	RENT/LEASE-PC/PRINTER
532535	RENT/LEASE-SERVER EQUIP
532536	RENT/LEASE-MAINFRAME EQP
534355	COMMUNICATION CABLE CONTR
534455	OTH STR-COMM CABLE CON
534522	**EQUIP-COMPUTERS (invalid account effective 07/01/02)**
534528	EQUIP-VOICE COMMUNICATION
534530	OTHER DP EQUIPMENT
534531	WAN EQUIPMENT
534532	VIDEO TRANSMISSION EQUIP
534533	LAN EQUIPMENT
534534	PC/PRINTER EQUIPMENT
534535	SERVER EQUIPMENT
534536	MAINFRAME EQUIPMENT

Infrastructure – Software

532441	MAINT AGRMT-OTHER SOFTWRE
532442	MAINT AGRMT-WAN SOFTWARE
532448	MAINT AGREE-PC SOFTWARE
532449	MAINT AGREE-SERVER SOFTWR
532452	MAINT AGREE-MAINFRME SFTW
532541	RENT/LEASE-PC SOFTWARE
532542	RENT/LEASE-SERVER SOFTWR
532543	RENT/LEASE-MAINFRAME SFTW
534710	**COMPUTER SOFTWARE (invalid account effective 07/01/02)**
534711	OTHER COMPUTER SOFTWARE
534712	WAN COMPUTER SOFTWARE
534713	PC SOFTWARE
534714	SERVER SOFTWARE
534720	MAINFRAME SOFTWARE
534730	EXTERNAL DEVELOP SOFTWARE

Other
Any other account not listed above

11. Roles and Responsibilities Matrix

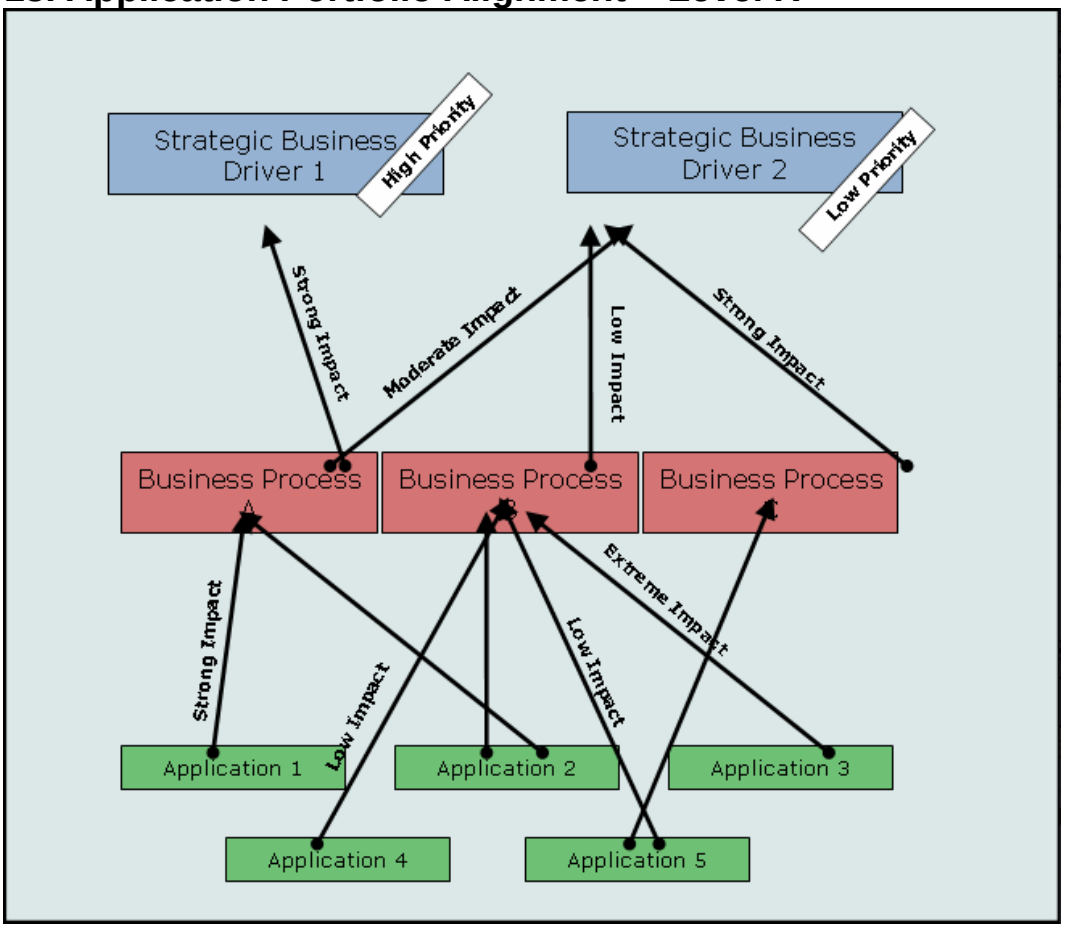
User Roles	Contributor[2]	Agency Reviewer	Agency Approver	Agency Application Reviewer[3]	State Reviewer	State Approver	State CIO (Final approver)
Summary Description of Role[1]	Contributors will have the ability to create/update both projects and applications that they are specifically assigned to. Agency Project Managers typically belong to this role.	Agency Reviewers will have view access to their assigned agency's full inventory of projects and applications. They serve as reviewers in the project status reporting and approval process. Agency PMO, Architecture, Security & Budget personnel typically belong to this role.	Agency Approver rights are similar to those of Agency Reviewers, but they are required to approve/reject (sign-off) projects before they can move forward in the workflow. Agency CIO's & CFO's belong to this role.	Application Reviewers have the ability to view applications and run reports on the agency's application inventory. Similar to the Agency Reviewer role, but for users who have access to only applications, not projects.	State Reviewers will have view access to the State's full inventory of projects and applications. They serve as reviewers in the project status reporting and approval process. State Oversight - Budget Analysts, EPMO, & EA users typically belong to this role.	State Approver rights are similar to those of State Reviewers, but they are required to approve/reject (sign-off) projects before they can move forward in the workflow. State Oversight Leaders - Head of EPMO, OSBM, Statewide Security & Architecture belong to this role.	Similar to State Approver rights, the State CIO role will have access to the State's portfolio of projects and applications and be the final project approvers in each workflow phase. State CIO & DCIO belong to this role.
User Rights - Projects[4]							
Create a new project	Yes	No	No	No	No	No	No
Edit project data	Yes, entire project	Yes, but limited to (Issues & Risks and Document Management Tabs)	Yes, but limited to (Issues & Risks and Document Management Tabs)	No	Yes, but limited to (Issues & Risks and Document Management Tabs)	Yes, but limited to (Issues & Risks and Document Management Tabs)	Yes, but limited to (Issues & Risks and Document Management Tabs)
Delete project data	Yes—all contributors can add or delete	No	No	No	No	No	No
View all projects within an agency	Note: only if assigned by practice to all agency projects	Yes	Yes	No	Yes	Yes	Yes
Required to act before project moves forward in workflow	Yes—all contributors must approve before the project can move forward.	No	Yes	No	No	Yes	Yes
Enter comments during workflow approval	Yes	No, but may be included in a future release	Yes	No	No, but may be included in a future release	Yes	Yes
Receive notification when a project is moved to the appropriate approval stage	No, but contributors will be notified after State CIO approval or if project is rejected during approval process	Yes	Yes	No	Yes	Yes	Yes
Run project level reports	Yes, for assigned projects	Yes, for all projects in assigned agency	Yes, for all projects in assigned agency	No	Yes, for all projects in State of NC	Yes, for all projects in State of NC	Yes, for all projects in State of NC
Run portfolio level reports (for projects)	No	Yes, for all projects in assigned agency	Yes, for all projects in assigned agency	No	Yes, for all projects in State of NC	Yes, for all projects in State of NC	Yes, for all projects in State of NC
Delete Projects	No	No	No	No	No	No	No
User Rights - Applications							
Create a new application	Yes	No	No	No	No	No	No
Edit application data	Yes, entire application	Yes, but limited to Document Management Tab	Yes, but limited to Document Management Tab	Yes, but limited to Document Management Tab	Yes, but limited to Document Management Tab	Yes, but limited to Document Management Tab	Yes, but limited to Document Management Tab
Delete application data	Yes, all assigned contributors can add or delete data	No	No	No	No	No	No
View all applications within an agency	Note: only if assigned by practice to all agency applications	Yes	Yes	Yes	Yes	Yes	Yes
Run portfolio level reports (for applications)	No	Yes, for all applications in assigned agency	Yes, for all applications in assigned agency	Yes, for all applications in assigned agency	Yes, for all applications in State of NC	Yes, for all applications in State of NC	Yes, for all applications in State of NC
Delete applications	No	No	No	No	No	No	No

1: Full description of user roles containted in PPM Tool Roles & Responsibilities doc V1.0
2: User rights for contributors only apply if they are assigned to specific applications or projects
3: New user role for Application Portfolio Management. Created for Agency users who only require access to applications, not projects.
4: Edit, Review & Approval user rights for projects will also be applicable for Expansion Budget Requests
An additional role for "Agency PMO" is available. Typically reserved for Agency PMO staff, this role combines the user rights of contributors and agency approvers.

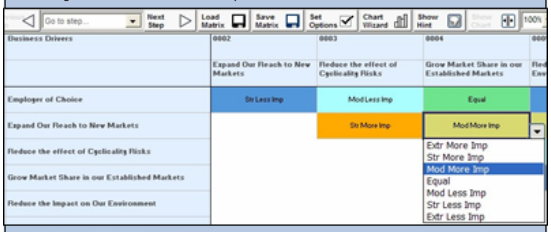
12. Agency Application Totals from Legacy Study

Agency Name	No. of Applications in Legacy Study	% of Total Applications	Estimated agency person hours**	Estimated agency person days
Agriculture	54	6.19%	216	27
CCPS	22	2.52%	88	11
Commerce	10	1.15%	40	5
DCR	35	4.01%	140	17.5
DENR	92	10.54%	368	46
DHHS	195	22.34%	780	97.5
DJJP	8	0.92%	32	4
DOA	36	4.12%	144	18
DOC	27	3.09%	108	13.5
DOI	15	1.72%	60	7.5
DOJ	71	8.13%	284	35.5
DOL	7	0.80%	28	3.5
DOR	12	1.37%	48	6
DOS	7	0.80%	28	3.5
DOT	115	13.17%	460	57.5
DPI	86	9.85%	344	43
DST	30	3.44%	120	15
ESC	19	2.18%	76	9.5
ITS	8	0.92%	32	4
NCCCS	6	0.69%	24	3
OSA	2	0.23%	8	1
OSBM	8	0.92%	32	4
OSC	7	0.80%	28	3.5
OSP	1	0.11%	4	0.5
Total	873	100.00%	3492	436.5

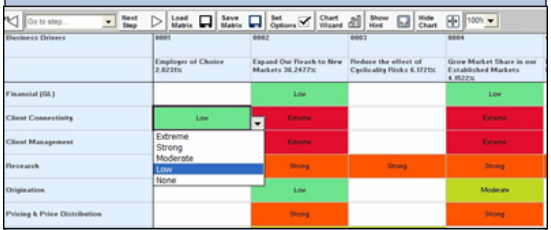
13. Application Portfolio Alignment – Level IV



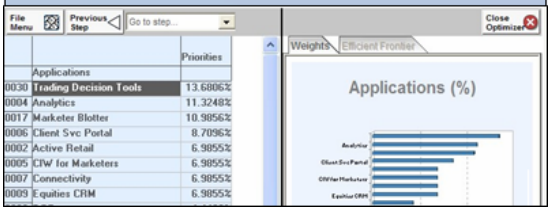
Step 1: Strategic Business Driver prioritization using a Pairwise comparison method



Step 2: Assessment of Business Processes impact of the Business Drivers



Step 3: Similar Matrix Assessment of Application Impact on Business Processes prioritizes the applications to the overall Business Drivers



14. Recommended Agency Project Team Resources for APM (Level IV)

Activity	Agency Participants	No. of Sessions*	Estimated agency person hours (per participant)
Define core business drivers by agency	Business Owners	2	4
Prioritize business drivers by agency	Business Owners	1	1
Define business processes	Business Owners / Business Analysts	2	4
Assess business process impact on business drivers	Business Owners / Business Analysts	1	2
Assess application impact on business processes	Application Owners / Business Analysts	1	2
Training - APM assessment & analysis	Business Owners, Business Analysts	1	4**
Total		8	17

- ❑ *Each working session will be scheduled for 2 hours, but may vary depending on scheduling/participation constraints
- ❑ **Level IV training will be a half day (4 hours) session and assumes no more than 5 attendees per agency / class

15. General Statute Reference – Analysis of State Agency Legacy Systems

§ 147-33.90. Analysis of State agency legacy systems.

(a) The Office of Information Technology Services shall analyze the State's legacy information technology systems and develop a plan to ascertain the needs, costs, and time frame required for State agencies to progress to more modern information technology systems.

(b) In conducting the legacy system assessment phase of the analysis, the Office shall:

(1) Examine the hierarchical structure and interrelated relationships within and between State agency legacy systems.

(2) Catalog and analyze the portfolio of legacy applications in use in State agencies and consider the extent to which new applications could be used concurrently with, or should replace, legacy systems.

(3) Consider issues related to migration from legacy environments to Internet-based and client/server environments, and related to the availability of programmers and other information technology professionals with the skills to migrate legacy applications to other environments.

(4) Study any other issue relative to the assessment of legacy information technology systems in State agencies.

(c) Upon completion of the legacy system assessment phase of the analysis, the Office shall ascertain the needs, costs, and time frame required to modernize State agency information technology. The Office shall complete this phase of the assessment by January 31, 2005, and shall report its findings and recommendations to the 2005 General Assembly. The findings and recommendations shall include a cost estimate and time line for modernization of legacy information technology systems in State agencies. The Office shall submit an ongoing, updated report on modernization needs, costs, and time lines to the General Assembly on the opening day of each biennial session. (2003-172, s. 1; 2004-129, s. 22.)

16. General Statute Reference – Planning and Financing State IT Resources

§ 147-33.72B. Planning and financing State information technology resources.

(a) In order to provide a systematic process for meeting the State's technology needs, the State Chief Information Officer shall develop a biennial State Information Technology Plan (Plan). The Plan shall be transmitted to the General Assembly by February 1 of each regular session.

(b) The Plan shall include the following elements:

(1) An inventory of current information technology assets and major projects currently in progress. As used in this subdivision, the term "major project" includes projects subject to review and approval under G.S. 147-33.72C, or that cost more than five hundred thousand dollars ($500,000) to implement.

(2) An evaluation and estimation of the significant unmet needs for information technology resources over a five-year time period. The Plan shall rank the unmet needs in priority order according to their urgency.

(3) A statement of the financial requirements posed by the significant unmet needs, together with a recommended funding schedule for each major project currently in progress or recommended for initiation during the upcoming fiscal biennium.

(4) An analysis of opportunities for statewide initiatives that would yield significant efficiencies or improve effectiveness in State programs.

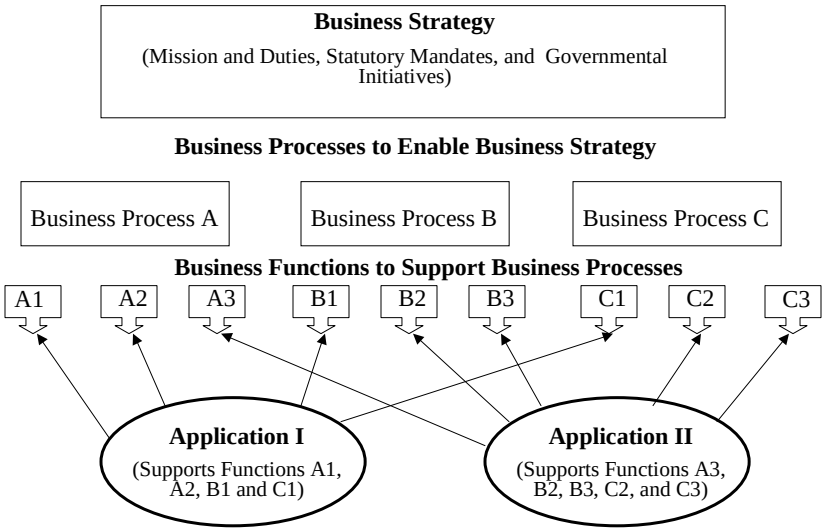
(c) Each executive agency shall biennially develop an agency information technology plan that includes the information required under subsection (b) of this section. The Office of Information Technology Services shall consult with and assist agencies in the preparation of these plans. Each agency shall submit its plan to the State Chief Information Officer by October 1 of each even-numbered year. (2004-129, s. 2.)

17. Definition of an Application

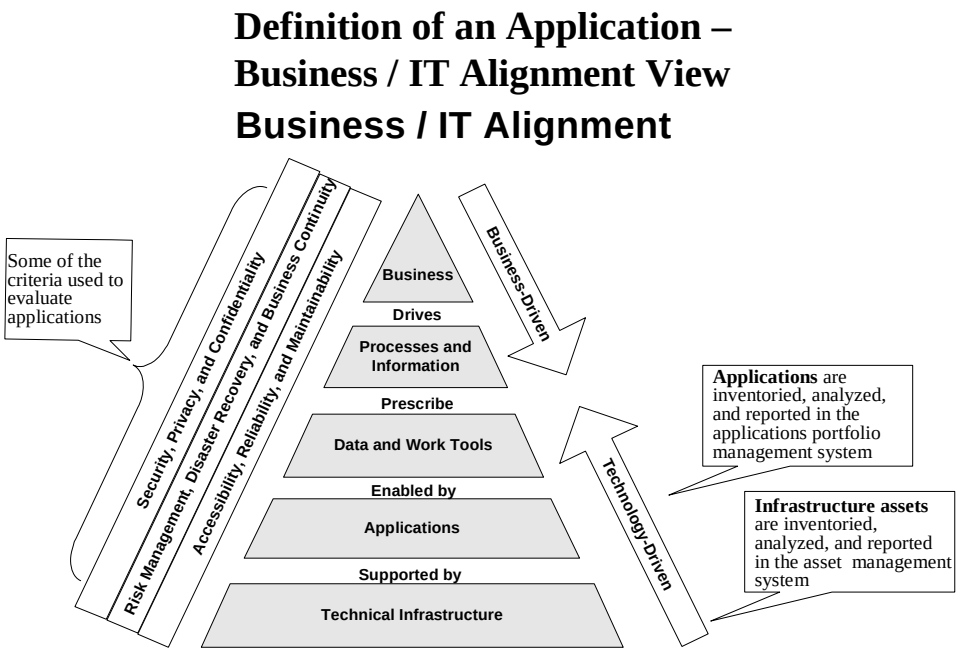
An application may be defined as “a computer system (potentially including multiple programs, modules, etc.) that is designed to accomplish operational tasks or functions that help a user perform his or her work.” The point of this material is to elaborate upon this definition and to explain more clearly, what is an application from the point of view of the application portfolio management initiative. Three perspectives (business view, business/IT alignment view, and technical view) may be helpful, and these are illustrated below.

The following diagram illustrates the **business view** of an application.

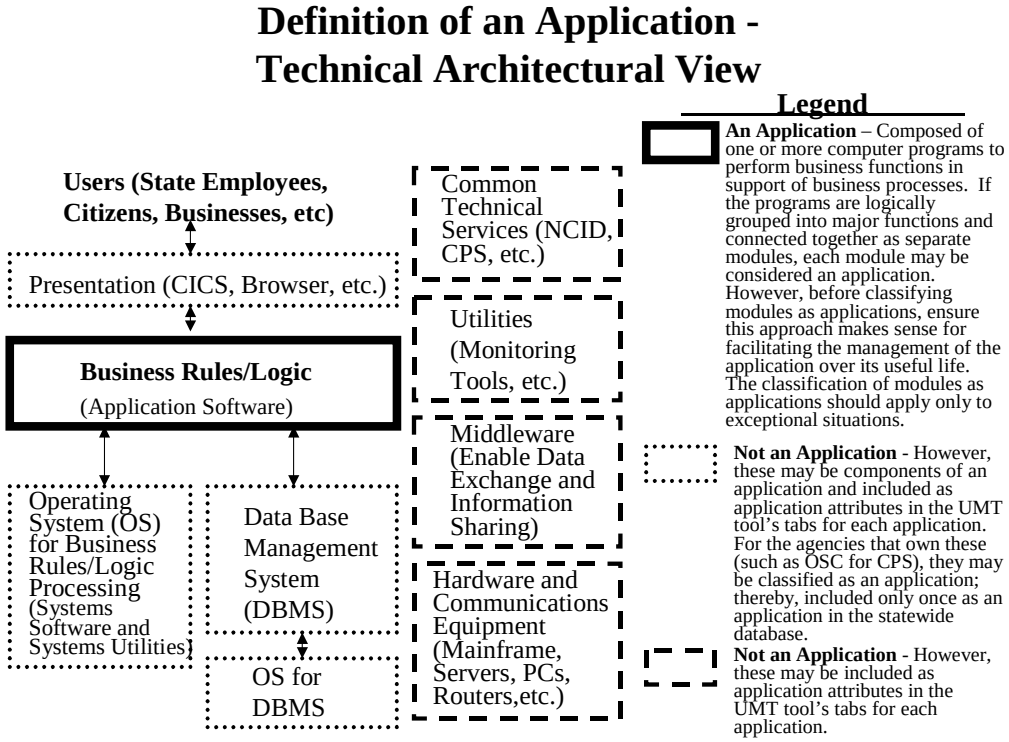
Definition of an Application – Business Support View



The **business/IT alignment view** is depicted as follows:



The diagram below illustrates the **technical architectural view** of an application.



While a multitude of different types of computer programs (software) and equipment components (hardware) can be included in or support an application,

the applications portfolio management activity focuses on the application software as the primary inventory item. This is similar to the business case and project being the inventory items for investment portfolio management and project portfolio management activities, respectively.

Even though primary attention is given to the application and its associated software that directly supports business processes and their associated business functions, the analyses and evaluations of applications and the decision making processes for managing them include the collection and review of attributes for their supporting hardware and software components. In addition to identifying the part – business rules and logic (application software) – that is the focus of study, the technical view above shows representative technical components that are cataloged and analyzed as part of the evaluation of an application. For example, while the main identity is the application software itself, the UMT tool will keep data about its associated operating system, DBMS, hardware type, technical services it uses, etc. Characteristics of the technical components that support the business rules/logic software are reviewed as part of the overall analysis of the application.

An application may be very large and complex, so that it may be technically and logically organized into major modules to process more involved business functions. Since these bigger applications may be composed of a collection of closely coupled groups of computer programs to perform interrelated business activities, the question often arises as to whether these applications should be inventoried, evaluated, and managed as one or as individual modules. This is a tricky question, and an approach toward addressing it may be to focus on two criteria, described below.

- **How will the application be managed over its useful life?** Will it be renovated, technically or functionally enhanced, consolidated, or replaced as a whole or as individual modules? Is it easier and simpler to review its financial, operational, technical, and business status and plan for its future from a module or whole perspective? How does the business management look at it (by module or as a whole), especially if requesting additional funds to renovate or replace it?

- **What is the most efficient and effective way to collect and analyze data about it and its supporting hardware and software components?** Modules mean more inventory items, more data attributes to collect and maintain, more analyses to perform, and more plans to make. Costs may be the determining element, as costs per module may be difficult to collect.

A question frequently arises as to what applications to include in the UMT database for ongoing analyses and management. A general rule is all operational applications that merit periodic review and determination of approaches for short- and long-term management actions should be included. The following items deserve elaboration in making this decision:

- Age – How old or young an application is should have no bearing on whether to included it in the applications portfolio management process. More mature applications may present cost or risk issues. Applications that have been recently implemented or partially implemented (if the implementation project is a phased one or using a phased rollout) should be included, as these may offer opportunities for providing more value or better benefits with cost-effective enhancements, as well as present unique risk problems. In fact, a part of the project closeout procedure is to add the application to the application portfolio management database in the UMT tool.

- Size – Diminutive size or narrow scope of use are not (by themselves) restrictive considerations for determining whether to include applications in the portfolio management inventory. Small applications supporting a limited number of users should be considered for inclusion. While appearing to be insufficient, the smaller applications may be extremely important to the agency or governmental program, and they may not be adequately managed if excluded from the applications portfolio management process. A PC-based computer program employing an Access database and having a user base of one or few people may fit the definition of an application.

  However, applications licensed through statewide enterprise contracts and related more to office automation or personal productivity than to the support of business processes or functions of governmental programs should be excluded from applications portfolio management. Examples of these applications include products from Microsoft, such as Word and Excel, and they and their contracts will be inventoried and managed through a separate asset manage initiative. The asset management inventory will include these software items, as well as infrastructure hardware (such as PCs, servers, laptops, communications equipment, etc.).

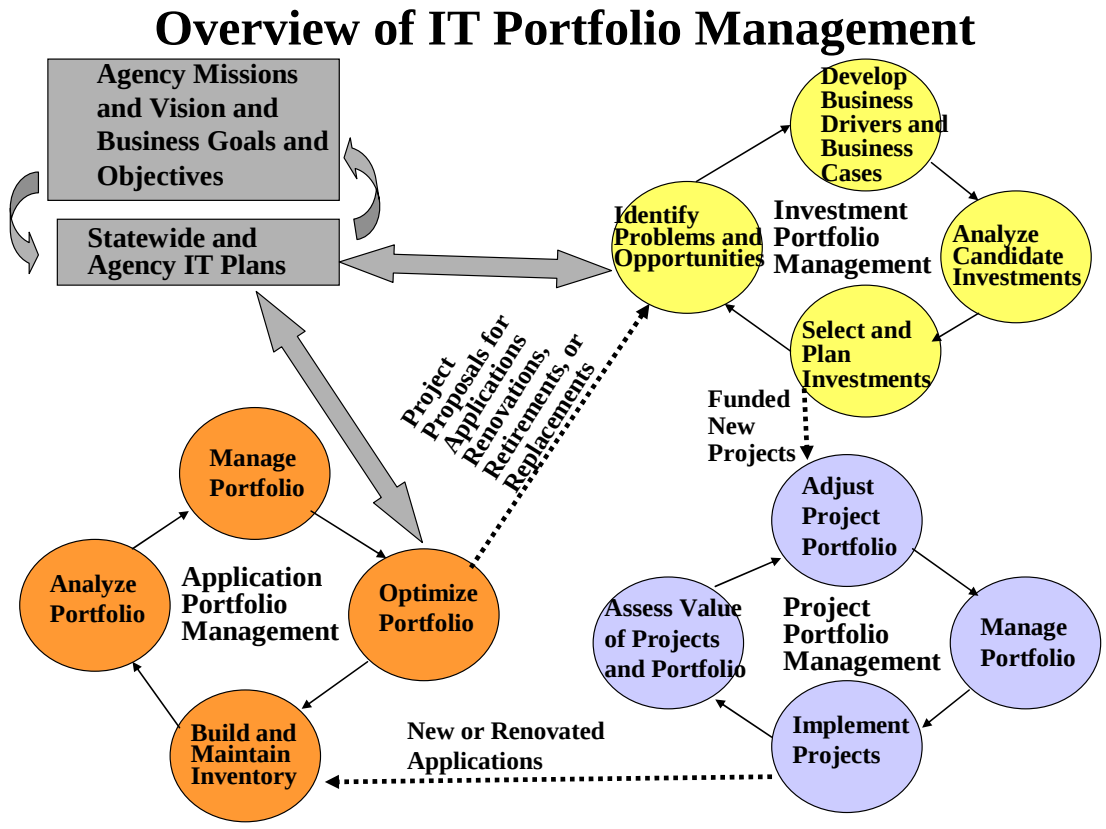
- Criticality to agency operations – An application does not have to be mission-critical to be included. In fact, the vast majority of applications are important, but not of the highest critically. These less vital applications also deserve to be inventoried, analyzed, and managed, because they represent significant initial and ongoing financial commitments and offer potentially serious exposures for operational, technical, security, and business risks.

Additional Guidelines

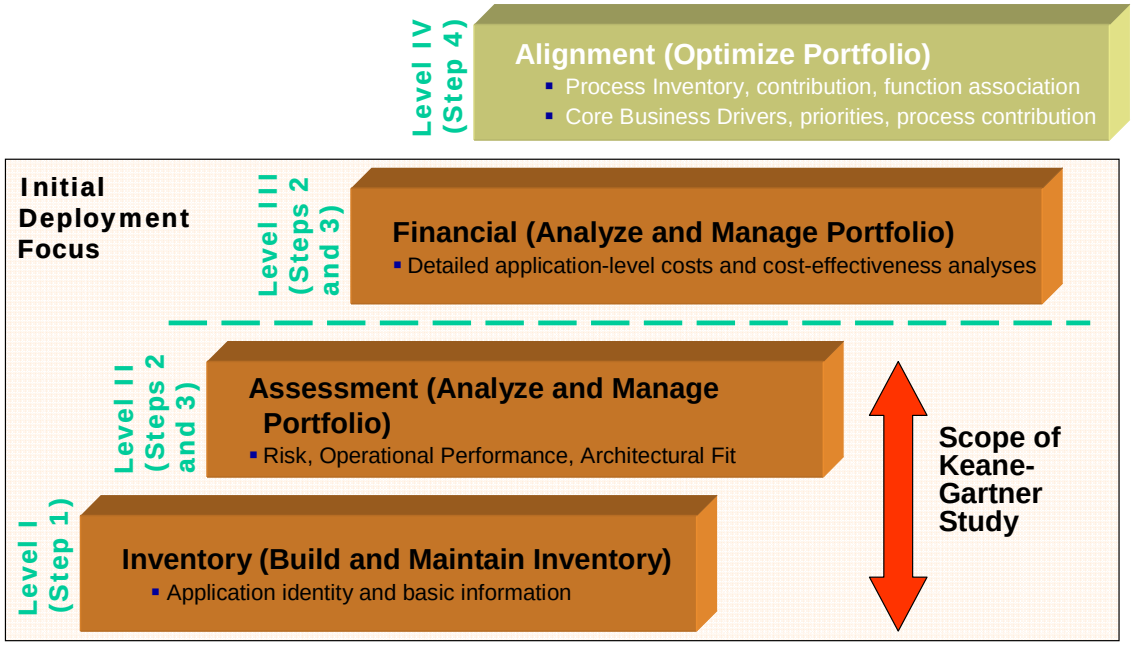
- **Versions**: It is not recommended to track versions of applications separately. As applications are upgraded/enhanced, new version information can be captured in the *Latest Release* and *Release Notes* fields and any associated technical attributes.

- **Productivity Tools**: Generally, individual spreadsheets and desktop databases are not applications, except in cases where these tools are crucial in routine processes. In that case they can be tracked at the agency's discretion. Some suggested guidelines for tracking these tools as applications might be if they:
  - Directly contribute to a business process or support business function(s)
  - Are actively supported by the systems community
  - Act as an automation link among applications
  - Incur significant support costs

18. Additional Information



Application Portfolio Management Perspectives



Timeline for Implementation and Use of Application Portfolio Management Capabilities